

references are not gels. Specifically, the cast mix solution of the Kohjiya reference is dried and contains none or a very small amount of electrolyte solution or organic solvent. See Example 1, column 4, lines 57-59 of Kohjiya. Moreover, the solid polymer electrolyte of the Miura reference contains none or a very small amount of electrolyte solution or organic solvent. See Example 1 of Miura. Accordingly, since the Kohjiya and Miura references fail to teach the large amount of electrolyte solution as presently recited, the compositions of the references are not gels, and are therefore, distinct from Applicants' claimed composition.

At the bottom of page 3 of the Office Action, the Examiner acknowledges that Kohjiya and Miura fail to teach gel compositions and attempts to rely on Takatera to remedy this deficiency. However, the polymers of Takatera are significantly different from the polymers of the present invention and that of Miura and Kohjiya and therefore, would not be relied upon by one of ordinary skill in the art in an attempt to achieve the present invention. Specifically, Takatera uses a fluoropolymer such as PVdF (polyvinylidene fluoride) (molecular weight: 10,000 to 1,000,000; column 4, lines 58-60) as a base polymer. The polymer used in the present invention is not a fluoropolymer. Moreover, Takatera separately uses a crosslinkable polyether having a low molecular weight (molecular weight: 1,000 to 50,000; column 4, lines 23-25) as a crosslinkable component added to the base polymer. In contrast, the crosslinkable component of the present invention has a high molecular weight (molecular weight:  $10^4$  to  $10^7$ ; claim 1) and is part of the polyether binary copolymer, i.e., the base polymer. See also claim 1 of Miura and Kohjiya. Thus, the polymer of Takatera is remarkably different from the polymers of the present invention, Miura and Kohjiya.

The fluoropolymer used in Takatera is a so-called sponge-like polymer, which absorbs an organic solvent. When an external pressure is applied to the fluoropolymer of Takatera, organic solvents easily leak out from the fluoropolymer, and thus, liquid-retaining ability is poor. In order to improve the liquid-retaining ability, the fluoropolymer of Takatera is modified by adding the crosslinkable polyether having a low molecular weight.

In contrast, the base polymer itself, having a high molecular weight, contains a crosslinkable component in the present invention. Therefore, it is not necessary to add the crosslinkable polyether as in Takatera because the present polymer does not have the problems associated with the fluoropolymer of Takatera, i.e., exudation of the nonaqueous solvent.

After the crosslinkable component is crosslinked in the polymer of the present invention, a polymer bulk is formed. The crosslink density of this polymer bulk is much less than that of Takatera, which uses the crosslinkable polyether having a low molecular weight. When considering the teachings of Takatera, a person having ordinary skill in the art would believe that a crosslinkable polyether having a low molecular weight should be added to the base polymer to improve the liquid-retaining ability. Surprisingly, as discussed above, the liquid-retaining ability of the base polymer of the present invention is sufficiently high without use of the crosslinkable polyether having a low molecular weight. Thus, even if an external pressure is applied to the polymer of the present invention, an organic solvent would not leak out from the polymer. It is believed that the polymer of the present invention has a much higher affinity to the organic solvent than the fluoropolymer of Takatera so that molecules of the present polymer and molecules of the organic solvent are sufficiently attracted so as to stay bound even under stress. The property of the present polymer of having a much higher affinity to organic solvents cannot be conceived from or achieved based on the teachings of Takatera, which uses the fluoropolymer.

Accordingly, in considering Takatera, a person of ordinary skill in the art would conceive only the use of a fluoropolymer to which a crosslinkable polyether must be added rather than a polymer with an integrated crosslinkable component. Moreover, Takatera teaches away from the present invention, wherein the polymer is not the fluoropolymer. See column 2, line 4 to column 3, line 16.

Similarly, the polymers of Miura and Kohjiya also contain an integrated crosslinkable component, and therefore also exhibit sufficient liquid-retaining ability without the addition of a crosslinkable polyether. See column 2, lines 12-34 of Kohjiya and column 2, line 60 to column 3, line 5 of Miura. In other words, the problem associated with the Takatera fluoropolymer, i.e., exudation of solvent, is also not present in the base polymer of Miura and Kohjiya. Accordingly, a person having ordinary skill in the art, reading the teachings of Miura and Kohjiya would not look to the inferior fluoropolymer composition of Takatera, which requires further modification by the addition of a crosslinkable polyether having a low molecular weight.

Moreover, as discussed above, the polymer electrolyte compositions of Miura and Kohjiya are dried, i.e., contain none or a very small amount of electrolyte solution or organic

solvent. Accordingly, exudation of electrolyte solution or organic solvent is not a problem in the compositions of Miura and Kohjiya. Thus, a person having ordinary skill in the art would not look to the Takatera reference, which teaches maintaining nonaqueous solvent in the polymer.

Based on the above, it is clear that a person of ordinary skill in the art would not combine the teachings of Kohjiya, Miura and Takatera. Moreover, even if such teachings were combined, the present invention would not be achieved. Specifically, Miura and Kohjiya teach compositions that are dried, i.e., not gels. Moreover, Takatera teaches a fluoropolymer to which a crosslinkable polyether is added to remedy the problem of solvent exudation. The Miura and Kohjiya references do not have the problem of solvent exudation because the polymer electrolyte compositions of Miura and Kohjiya have an integrated crosslinkable component. Further, the Miura and Kohjiya compositions are dried and thus do not require the retention of solvent in the polymer. Therefore, a person having ordinary skill in the art would not consider the Takatera reference when reading the Miura and Kohjiya references.

Thus, the invention of claims 1-8 are not obvious over Kohjiya in view of Miura and further in view of Takatera and these rejections should be withdrawn.

**Conclusion**

Therefore, in view of the foregoing remarks, it is submitted that each of the grounds of rejection set forth by the Examiner has been overcome, and that the application is in condition for allowance. Such allowance is solicited.

If, after reviewing this Response, the Examiner feels there are any issues remaining which must be resolved before the application can be passed to issue, the Examiner is respectfully requested to contact the undersigned by telephone in order to resolve such issues.

Respectfully submitted,

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/Chao Gao/

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